Notice No.9

Rules and Regulations for the Classification of Special Service Craft July 2017

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

Issue date: June 2018

Amendments to	Effective date	IACS/IMO implementation (if applicable)
Part 3, Chapter 4, Section 4	1 July 2018	N/A
Part 3, Chapter 5, Section 8	1 July 2018	1 July 2018
Part 6, Chapter 5, Section 2	1 July 2018	N/A
Part 7, Chapter 5, Section 2	1 July 2018	N/A
Part 8, Chapter 5, Section 2	1 July 2018	N/A

Lloyd's Register

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Part 3, Chapter 4
Closing Arrangements and Outfit

■ *Section 4*
Side and stern doors and other shell openings

4.4 Doors serving as ramps

4.4.2 ~~The design of the hinges for these doors is to take into account the craft angle of trim or heel which may result in uneven loading of the hinges.~~ The support structure (including hinges) is to be assessed in accordance with *Pt 6, Ch 5, 2.13 Ramp supporting structure*, *Pt 7, Ch 5, 2.13 Ramp supporting structure* and *Pt 8, Ch 5, 2.13 Ramp supporting structure* for steel, aluminium alloy and composite construction, respectively.

Part 3, Chapter 5
Anchoring and Mooring Equipment

■ *Section 8*
Anchor windlass design and testing

8.1 General

8.1.1 A windlass or winch ~~of sufficient power and suitable for the size of anchor cable~~ used for handling anchors, suitable for the size of chain cable required by *Part 3 Chapter 5 Section 6 Anchor cable* and complying with the following criteria is to be fitted t~~o the craft~~. Where Owners require equipment significantly in excess of Rule requirements, it is their responsibility to specify increased windlass power.

8.1.2 The design, construction and testing of windlasses are to conform with a relevant National or International Standard or code of practice acceptable to LR. To be considered acceptable, the standard, or code of practice, is to specify criteria for evaluation of stresses, performance and testing.

8.1.3 Operation and maintenance procedures for the anchor windlass are to be incorporated in the vessel operations manual.

Existing paragraphs 8.1.2 to 8.1.5 have been renumbered 8.1.4 to 8.1.7.

8.2 Plans and particulars to be submitted

8.2.1 The following plans showing the design specifications, the standard of compliance, engineering analyses and details of construction, as applicable, are to be submitted for evaluation:

- Windlass design specifications, anchor and chain cable particulars, performance criteria, and standard of compliance.
- Windlass foundation drawings inclusive of the supporting structure below deck. The details shall include bolts, chocks, shear stoppers etc. along with the foot print loads for the specified windlass ratings.
- Chain stopper foundation drawings inclusive of the supporting structure below deck. The details shall include bolts, chocks, shear stoppers etc. along with the foot print loads for the specified rating.
- Windlass arrangement plans showing all the components of the anchoring/mooring system such as the prime mover, shafting, cable lifter, anchors and chain cables; mooring winches, wires and fairleads, if they form part of the windlass machinery; brakes; controls; etc.
- Dimensions, materials, welding details, as applicable, of all torque-transmitting (shafts, gears, clutches, couplings, coupling bolts, etc.) and all load bearing (shaft bearings, cable lifter, sheaves, drums, bed-frames, etc.) components of the windlass and of the winch, where applicable, including brakes, chain stopper (if fitted), and foundation.
- Hydraulic system, to include:
  - (i) piping diagram along with system design pressure,
  - (ii) safety valves arrangement and settings,
  - (iii) material specifications for pipes and equipment,
  - (iv) typical pipe joints, as applicable, and
  - (v) technical data and details for hydraulic motors.
  - (vi) cooling systems arrangements for hydraulic system oil
- Electrical one-line diagram along with cable specification and size, motor controller, protective device rating or setting, as applicable.
- Control, monitoring and instrumentation arrangements.
- Engineering analyses for torque-transmitting and load-bearing components demonstrating their compliance with recognised standards or codes of practice. Analyses for gears are to be in accordance with a recognised standard.
- Calculations proving satisfactory inertia loads for the intended windlass, *see Pt 3, Ch 5, 8.4 Windlass design 8.4.1 (b)*.

- Plans and data for windlass electric motors including associated gears rated 100 kW and over.
- Calculations demonstrating that the windlass prime mover is capable of attaining the hoisting speed, the required continuous duty pull, and the overload capacity are to be submitted if the ‘load testing’ including ‘overload’ capacity of the entire windlass unit is not carried out at the shop (*see Pt 3, Ch 5, 8.9 Shop inspection and testing 8.9.1(b)*).

8.3 Materials and fabrication

8.3.1 Materials used in the construction of torque-transmitting and load-bearing parts of windlasses are to comply with LR *Rules for the Manufacture, Testing and Certification of Materials, July 2017, incorporating Notice No. 1 & 2* or an appropriate National or International Standard acceptable to LR, provided that the Standard gives reasonable equivalence to the requirement of LR. The proposed materials are to be indicated in the construction plans and are to be approved in connection with the design. All such materials are to be certified by the material manufacturers and are to be traceable to the manufacturers’ certificates.

8.3.2 Weld joint designs are to be shown in the submitted construction plans and are to be appraised in association with the approval of the windlass design in accordance with an appropriate National or International Standard acceptable to LR. .

8.3.3 Welding procedures, welding consumables and welders are to comply with the *Rules for the Manufacture, Testing and Certification of Materials, July 2017, incorporating Notice No. 1 & 2* or an appropriate National or International Standard acceptable to LR.

8.3.4 The degree of non-destructive examination of welds and post-weld heat treatment, if any, are to be specified and submitted for consideration.

~~8.2~~ 8.4 Windlass design

~~8.2.1~~ 8.4.1 In addition to the requirements of the National or International Standard or code of practice acceptable to LR (*see Pt 3, Ch 5, 8.1 General 8.1.2*) ~~The~~ the following performance requirements ~~criteria~~ are to be ~~used as a design basis for the windlass~~ complied with:

(a) Holding Loads: Calculations are to be made to show that, in the holding condition (single anchor, brake fully applied and chain cable lifter declutched) and under a load equal to 80 per cent of the specified minimum breaking strength of the chain cable, the maximum stress in each load bearing component will not exceed the maximum permissible yield. For installations fitted with a chain cable stopper, 45 per cent of the specified minimum breaking strength of the chain cable may instead be used for the calculation.

(b) Inertia Loads: The design of the drive train, including prime mover, reduction gears, bearings, clutches, shafts, cable lifter and bolting is to consider the dynamic effects of sudden stopping and starting of the prime mover or chain cable, so as to limit inertial load.

~~(a)~~(c) Continuous Duty Pull: The windlass is to have sufficient power to exert a continuous duty pull ~~of:~~, Z_{cont1}, over a period of 30 minutes corresponding to the grade and diameter, d_c, of the chain cables as follows:

~~$28,5d_c^2$ N - for Grade U1 chain, with $d_c < 14$ mm~~
~~$37,5d_c^2$ N - for Grade U1 chain, with $d_c \geq 14$ mm~~
~~$42,5d_c^2$ N - for Grade U2 chain~~
~~$47,5d_c^2$ N - for Grade U3 chain~~
~~over a period of $0,12L_c$ minutes. The test period need not be taken longer than 30 minutes~~

where

~~= d_c is the chain diameter, in mm.~~
~~= L_c is the total length of chain cable on board, in metres, as given by *Table 5.6.1 Chain cable*.~~

(i) for specified design anchorage depths up to 82,5 m when using ordinary stockless anchors:

Chain cable grade	Z_{cont1} (N)
U1	$37,5d_c^2$
U2	$42,5d_c^2$
U3	$47,5d_c^2$
Unit of d	mm

(i) for specified design anchorage depths greater than 82,5 m a continuous duty pull Z_{cont2} is:

$$Z_{cont2} = Z_{cont1} + (D_a - 82,5) \times 0,27d_c^2 \text{ N}$$

where

d_c = is the chain diameter, in mm
D_a = is the specified design anchorage depth, in metres

The anchor masses are assumed to be the masses as given in *Table 5.6.1 Equipment - Kedge anchors and wires, towlines and mooring lines*. The value of Z_{cont} is based on the hoisting of one anchor at a time, and also assumes that the effects of buoyancy and hawse pipe efficiency (assumed to be 70 per cent) have been accounted for. In general, stresses in each torque-transmitting component are not to exceed 40 per cent of yield strength (or 0,2 per cent proof stress) of the material under these loading conditions.

~~(b)~~(d) Overload Capability: The windlass prime mover is to ~~have sufficient power to exert,~~ be able to provide, for ~~over~~ a period of at least two minutes, the necessary temporary overload capacity for breaking out the anchor. This temporary overload capacity is to be a pull equal to the greater of:

(i) short term pull:

1,5 times the continuous duty pull as defined in *Pt 3, Ch 5, 8.1 Windlass design* ~~*8.2.1.(a)*~~ *8.4.1(c)*, or

(ii) anchor breakout pull:

$$12{,}18W_a + \frac{7{,}0L_c{d_c}^2}{100} \quad N$$

where

L_c = is the total length of chain cable on board, in metres, as given by *Table 13.7.2 Equipment – Bower anchors and chain cables*

W_a = is the mass of bower anchor (kg) as given in *Table 5.5.1 Anchors*.

Note: The speed in this period may be lower than normal.

(e) Hoisting Speed: The mean speed of the chain cable during hoisting of the anchor and cable is to be 0,15 m/s.

~~(c) In the absence of a chain stopper, the windlass, with its braking system in action and in conditions simulating those likely to occur in service, is to be able to withstand, without permanent deformation or brake slip, a load, applied to the cable, given by:~~

~~$K_b d_c^2 (44 - 0{,}08d_c)$ N~~

~~where~~

~~K_b = 7,85 for Cable Grade U1~~

~~= 11,00 for Cable Grade U2~~

~~= 15,70 for Cable Grade U3~~

~~(d) Where a chain stopper is fitted, the windlass braking system is to have sufficient brake capacity to ensure safe stopping when paying out the anchor and chain. It is the Master's responsibility to ensure that the chain stopper is in use when riding at anchor. At clearly visible locations on the bridge and adjacent to the windlass control position, the following notice is to be displayed adjacent to the windlass control position, and at clearly visible locations on the bridge if the windlass can be operated remotely:~~

~~'The brake is rated to permit controlled descent of the anchor and chain only. The chain stopper is to be used at all times whilst riding at anchor.'~~

~~It is recommended that the windlass, with its braking system in action and in conditions simulating those likely to occur in service, is to be able to withstand, without permanent deformation or brake slip, a load, applied to the cable, given by:~~

~~$K_b d_c^2 (44 – 0{,}08d_c)$ N~~

~~where~~

~~K_b = 4,41 for Cable Grade U1~~

~~= 6,18 for Cable Grade U2~~

~~= 8,33 for Cable Grade U3~~

~~The performance criteria are to be verified by means of shop tests in the case of windlasses manufactured on an individual basis. Windlasses manufactured under LR's Type Approval Scheme for Marine Engineering Equipment will not require shop testing on an individual basis.~~

(f) Brake Capacity: The capacity of the windlass brake is to be sufficient to stop the anchor and chain cable when paying out the chain cable in a controlled manner. Where a chain cable stopper is not fitted, the brake is to produce a torque capable of withstanding a pull equal to 80 per cent of the specified minimum breaking strength of the chain cable without any permanent deformation of strength members and without brake slip. Where a chain cable stopper is fitted, 45 per cent of the breaking strength may instead be applied. The following simplified formula is to be used to calculate the required brake capacity.

$$K_b\, d_c^{\ 2} (44 - 0{,}08d_c) \quad N$$

Where K_b is given in *Table 5.8.1 Values of K_b*.

Table 5.8.1 Values of K_b

	K_b	
Cable grade	Windless used in conjunction with chain stopper	Chain stopper not fitted
U1	4,41	7,85
U2	6,18	11,0
U3	8,83	15,7

8.4.3 As an alternative to conducting the engineering analyses required by *Pt 3, Ch 5, 8.4 Windlass Design 8.4.2*, approval of the windlass mechanical design can be based on a type test, in which case the testing procedure is to be submitted for consideration.

~~8.2.3~~ 8.4.4 Calculations for torque transmitting components are to be based on 1500 hours of operation with a nominal load spectrum factor of K_m = 1,0. Alternatively, unlimited hours with a nominal load spectrum factor of K_m = 0,8 can be applied.

~~8.2.4 Where the available input torque exceeds the torque required for anchor breakout, torque overload protection is to be fitted.~~

~~8.2.6 The maximum calculated stress from the load cases stated in *Table 5.8.1 Design load cases for the windlass* are not to exceed the permissible stress limits stated in *Table 5.8.2 Permissible stress for design load cases*.~~

~~Table 5.8.1 Design load cases for the windlass~~

~~Load case~~	~~Condition~~	~~Note~~
~~1~~	~~Continuous pull~~	~~*See Pt 3, Ch 5, 8.2 Windlass design 8.2.1.(a)*~~
~~2~~	~~Overload pull~~	~~*See Pt 3, Ch 5, 8.2 Windlass design 8.2.1.(b)*~~
~~3~~	~~Brake holding load~~	~~*See Pt 3, Ch 5, 8.2 Windlass design 8.2.1.(c)* and *Pt 3, Ch 5, 8.2 Windlass design 8.2.1.(d)*~~

~~Table 5.8.2 Permissible stress for design load cases~~

~~Stress~~	~~Load case~~	
	~~1 and 2~~	~~3~~
	~~Permissible stress~~	
~~Tension~~	~~0,8 *Y*~~	~~0,9*Y*~~
~~Compression or bending~~	~~0,8 *Y*~~	~~0,9*Y*~~
~~Shear~~	~~0,7 *Y*~~	~~0,7 *Y*~~
~~Combined~~	~~0,85 *Y*~~	~~0,9*Y*~~

~~Note *1.* Where a component is subjected to axial tensile, axial compressive, bending or shear stress, F_c is to be calculated in the normal manner.~~

~~Note *2.* Where a component is subjected to a combination of co-existent stresses, F_c is the combined stress which is to be calculated as follows:~~

= ~~Combined bending and tension~~

~~F_c~~ = ~~$1{,}25f_t + f_{bt}$~~

= ~~Combined bending and compression~~

~~F_c~~ = ~~$f_c + f_{bc}$~~

= ~~Combined bending, tension and shear~~

=
$$F_c = \sqrt{(1,25f_t + f_{bt})^2 + 3f_q^2}$$

= ~~Combined bending, compression and shear~~

=
$$F_c = \sqrt{(f_c + f_{bc})^2 + 3f_q^2}$$

= ~~where~~

~~F_c is the calculated stress~~

~~f_t is the calculated axial tensile stress~~

~~f_c is the calculated axial compressive stress~~

~~f_{bt} is the calculated maximum tensile stress due to bending about both principal axes~~

~~f_{bc} is the calculated maximum compressive stress due to bending about both principal axes~~

~~f_q is the calculated shear stress~~

~~*Y* is the specified 0,2 per cent proof stress for the material~~

~~8.2.7~~ 8.4.5 The following criteria are to be used for gearing design:

(a) Torque is to be based on the performance criteria specified in *Pt 3, Ch 5, ~~8.2~~ 8.4 Windlass design ~~8.2.1~~ 8.4.1*.
(b) The use of an equivalent torque, T_{eq}, for dynamic strength calculations is acceptable but the derivation is to be submitted to LR for consideration.
(c) The application factor for dynamic strength calculation, K_A, is to be 1,15.
(d) Calculations are to be based on 1500 hours of operation.
(e) The static torque is to be 1,5 x T_n where T_n is the nominal torque.
(f) The minimum factors of safety for load capacity of spur and helical gears, as derived using ISO 6336 or a relevant National or International standard acceptable to LR, are to be 1,5 for bending stress and 0,6 for contact stress.

Gears intended to transmit power greater than 100kW are to be certified by LR, the gears are to meet the requirements of *Pt 11, Ch 1 Gearing*.

~~8.2.8 Keyways are to be designed to a relevant National or International Standard acceptable to LR.~~
~~8.2.9 The maximum stress in brake components is not to exceed the permissible stress stated in *Table 5.8.2 Permissible stress for design load cases*.~~

8.5 Additional requirements for windlass design for Special Service Craft

~~8.2.10~~ 8.5.1 Hand-operated ~~winches~~ windlasses are only acceptable if the effort required at the handle does not exceed 150 ~~kgf~~N for raising one anchor at a speed of not less than 2 m/min and making about thirty turns of the handle per minute.

~~8.2.11~~ 8.5.2 ~~Winches~~ windlasses suitable for operation by hand as well as by external power are to be so constructed that the power drive cannot activate the hand drive.

8.5.3 Where a chain stopper is fitted, the windlass braking system is to have sufficient brake capacity to ensure safe stopping when paying out the anchor and chain. It is the Master's responsibility to ensure that the chain stopper is in use when riding at anchor. At clearly visible locations on the bridge and adjacent to the windlass control position, the following notice is to be displayed adjacent to the windlass control position, and at clearly visible locations on the bridge if the windlass can be operated remotely:

'The brake is rated to permit controlled descent of the anchor and chain only. The chain stopper is to be used at all times whilst riding at anchor.'

8.6 Alternative windlass design requirements for Special Service Craft for restricted service

8.6.1 Where a chain cable of grade U1 with diameter d_c less than 14mm is used, the windlass is to have sufficient power to exert, over a period of 30 minutes, a continuous duty pull of:

$$Z_{cont1} = 28{,}5 d_c^{\,2}$$

In all other cases the windlass is to be capable of providing a continuous duty pull as required by *Pt 3, Ch 5, 8.4 Windlass design, 8.4.1(c)*.

8.6.2 Where *Pt 3, Ch 5, 8.6 Alternative windlass design requirements for Special Service Craft for restricted service 8.6.1* applies, the windlass overload capacity is to meet the requirement of the short term pull as defined in *Pt 3, Ch 5, 8.4 Windlass design 8.4.1(d)* using the continuous duty pull defined in *Pt 3, Ch 5, 8.6 Alternative windlass design requirements for Special Service Craft for restricted service 8.6.1.*

8.6.3 All aspects of windlass design except those referenced above are to meet the requirements of *Pt 3, Ch 5, 8.4 Windlass design*.

~~8.4 Maintenance arrangements~~

~~8.4.1 Access is to be provided for inspection of reduction gears, bearings, brakes, etc.~~

~~8.4.2 Accessible manual lubrication points, including nipples, are to be provided for both for oil and grease, as applicable.~~

~~8.4.3 Gear-boxes are to be provided with adequate access arrangements for monitoring and replacing oil.~~

8.7 Hydraulic systems

8.7.1 Hydraulic systems where employed for driving windlasses are to comply with the requirements of *Pt 15, Ch 3, 6 Lubricating/hydraulic oil systems.*

8.8 Electrical systems

8.8.1 Electric motors are to meet the requirements of *Pt 16, Ch 2, 9 Rotating machines*. Motors exposed to weather are to have enclosures suitable for their location, *see also Pt 16, Ch 2, 1.11 Location and construction 1.11.1*.

8.8.2 Motor branch circuits are to be protected in accordance with the applicable Rules, and cable sizing is to be in accordance with the requirements of the *Pt 16, Ch 2, 11 Electric cables, optical fibre cables and busbar trunking systems (busways)*.

Existing sub-Section 8.3 has been renumbered 8.9.

~~8.5~~ 8.10 Protection arrangements

Existing paragraphs 8.5.1 to 8.5.4 have been renumbered 8.10.1 to 8.10.4.

8.10.5 Electrical cables installed in exposed locations on open deck are to be provided with effective mechanical protection.

8.10.6 Means are to be provided to contain potential debris resulting from severe damage of the prime mover due to over-speed in the event of uncontrolled rendering of the cable, particularly when an axial piston type hydraulic motor forms the prime mover.

~~8.2.5~~ 8.10.7 An arrangement to release the anchor and chain in the event of windlass power failure is to be provided. Windlasses are to be fitted with couplings which are capable of disengaging between the cable lifter and the drive shaft. Hydraulically or electrically operated couplings are to be capable of being disengaged manually.

8.10.8 The design of the windlass is to be such that the following requirements or equivalent arrangements will minimise the probability of the chain locker or forecastle being flooded in bad weather:
(g) a weathertight connection can be made between the windlass bedplate, or its equivalent, and the upper end of the chain pipe, by means of cover or seal.
(b) access to the chain pipe is adequate to permit the fitting of a cover or seal, of sufficient strength and proper design, over the chain pipe while the ship is at sea.

8.11 Shop inspection and testing

8.11.1 Windlasses are to be inspected during fabrication at the manufacturers' facilities by a Surveyor for conformance with the approved plans. Acceptance tests, as specified in the specified Standard (*see Pt 3, Ch 5, 8.1 General 8.1.2*), are to be witnessed by the Surveyor and include the following tests, as a minimum:
(a) No-load test. The windlass is to be run without load at nominal speed in each direction for a total of 30 minutes. If the windlass is provided with a gear change, an additional run in each direction for 5 minutes at each gear change is required.
(b) Load test. The windlass is to be tested to verify that the continuous duty pull, overload capacity and hoisting speed as specified in *Pt 3, Ch 5, 8.4 Windlass design 8.4.1* can be achieved.
Where the manufacturing works does not have adequate facilities, these tests, including the adjustment of the overload protection, can be carried out on board ship. In these cases, functional testing in the manufacturer's works is to be performed under no-load conditions.
(c) Brake capacity test. The holding power of the brake is to be verified through testing if not verified by calculation.

~~8.2.2~~ 8.11.2 Windlass performance characteristics specified in ~~*Pt 3, Ch 5, 8.2 Windlass design 8.2.1*~~ ~~and~~ ~~*Pt 3, Ch 5, 8.3 Control arrangements 8.3.2*~~ *Pt 3, Ch 5, 8.11 Shop inspection and testing 8.11.1* are based on the following assumptions:
(a) one cable lifter only is connected to the drive shaft;
(b) continuous duty and short term pulls are measured at the cable lifter;
~~(c) brake tests are carried out with the brakes fully applied and the cable lifter declutched;~~
~~(d) the probability of declutching a cable lifter from the motor with its brake in the off position is minimised;~~
~~(e)~~(c) hawse pipe efficiency assumed to be 70 per cent.

~~8.7~~ 8.12 ~~Tests and trials~~ On-board testing

~~8.7.1 Where shop testing is not possible and Type Approval has not been obtained, calculations demonstrating compliance with~~ ~~*Pt 3, Ch 5, 8.2 Windlass design 8.2.1*~~ ~~are to be submitted together with detailed plans and an arrangement plan showing the following components:~~

- ~~Shafting.~~
- ~~Gearing.~~
- ~~Brakes.~~
- ~~Clutches.~~

8.12.1 Each windlass is to be tested under working conditions after installation on board to demonstrate satisfactory operation. Each unit is to be independently tested for braking, clutch functioning, lowering and hoisting of the chain cable and anchor, proper riding of the chain over the cable lifter, proper transit of the chain through the hawse pipe and the chain pipe, and effecting proper stowage of the chain and the anchor. It is to be confirmed that anchors properly seat in the stored position and that chain stoppers function as designed if fitted. The braking capacity is to be tested by intermittently paying out and holding the chain cable by means of the application of the brake.

~~8.7.2~~ 8.12.2 ~~During trials on board the craft the windlass should be shown to be capable of raising the anchor from a depth of 82,5 m to a depth of 27,5 m at a mean speed of 9 m/min. Where the depth of water in the trial area is inadequate, or the anchor cable is less than 82,5 m, suitable equivalent simulating conditions will be considered as an alternative.~~ The mean hoisting speed, as specified in *Pt 3, Ch 5, 8.4 Windlass design 8.4.1 (e)* is to be measured and verified. For testing purposes, the speed is to be measured over two shots of chain cable and initially with at least three shots of chain (82,5 m or 45 fathoms in length) and the anchor submerged and hanging free. Following trials, the ship will be eligible to be assigned a descriptive note **specified design anchorage depth . . . metres**, which will be entered in column 6 of the *Register Book*.

8.12.3 Load testing is to be carried out if this was not previously completed as required by *Pt 3, Ch 5, 8.9 Shop inspection and testing 8.9.1 (b).*

8.12.4 Where the depth of water in the trial area is inadequate, suitable equivalent simulating conditions will be considered as an alternative.

~~8.6~~ 8.13 Marking and identification

~~8.6.1 Controls are to be permanently marked for identification, unless their functions are readily apparent. If required, instructions are to be permanently marked and readily visible.~~

8.13.1 The windlass is to be permanently marked with the following information:
(a) Nominal size of the cable chain including mean diameter, grade and percentage of the breaking load the windlass is designed to hold (e.g. 100/3/45).
(b) Maximum anchorage depth, in metres.

Existing sub-Section 8.8 has been renumbered 8.14.

Part 6, Chapter 5
Special Features

■ *Section 2*
Special features

2.13 Ramp supporting structure

2.13.1 The support structure (including hinges) in way of the interface between a ramp and the craft is to be assessed in accordance with the appropriate criteria given in *Ch 6, 2 Loading and design criteria* of the *Code for Lifting appliances in the Marine Environment, July 2017, incorporating Notice No. 1 & 2.*

2.13.2 The loads that the ramp supporting structure will be subjected to are to be submitted by the designer or Shipbuilder. These loads are to be calculated in accordance with *Ch 6, 2 Loading and design criteria* of the *Code for Lifting appliances in the Marine Environment, July 2017, incorporating Notice No. 1 & 2*. Load cases calculated in accordance with alternative standards can be accepted subject to agreement with Lloyd’s Register (hereinafter referred to as LR).

2.13.3 Loads already existing in the supporting structure (other than those from the ramp) are to be superimposed if applicable.

2.13.4 Ramps forming part of the watertight integrity of the hull are also to be assessed in accordance with the applicable scantling requirements.

Part 7, Chapter 5
Special Features

■ *Section 2*
Special features

2.13 Ramp supporting structure

2.13.1 The support structure (including hinges) in way of the interface between a ramp and the craft is to be assessed in accordance with the appropriate criteria given in *Ch 6, 2 Loading and design criteria* of the *Code for Lifting appliances in the Marine Environment, July 2017, incorporating Notice No. 1 & 2*.

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2.13.4 Ramps forming part of the watertight integrity of the hull are also to be assessed in accordance with the applicable scantling requirements.

Part 8, Chapter 5
Special Features

■ *Section 2*
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2.13.3 Loads already existing in the supporting structure (other than those from the ramp) are to be superimposed if applicable.

2.13.4 Ramps forming part of the watertight integrity of the hull are also to be assessed in accordance with the applicable scantling requirements.

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